PB-215 690

LUCKY PEAK RESERVOIR 1965, WATER QUALITY DATA REPORT

Federal Water Pollution Control Administration
Portland, Oregon

January 1966

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LUCKY PEAK RESERVOIR
1965
WATER QUALITY DATA REPORT

January, 1966

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Federal Water Pollution Control Administration
Pacific Northwest

570 Pittock Block
Portland, Oregon 97205

January 19, 1966

Colonel Frank D. McElwee, District Engineer
U. S. Army Engineer District, Walla Walla
Corps of Engineers
Building 602, City-County Airport
Walla Walla, Washington 99362

Dear Colonel McElwee:

~~Enclosed~~ The present [illegible] are tabulations of water quality data collected in 1965 during ~~our~~ cooperative surveys on Lucky Peak Reservoir. These data partially complete the investigations for which reimbursable funds were authorized in your letter of July 13, 1965.

Graphical interpretation of results is also given, as well as a narrative of preliminary results of the first survey.

These data are released at this time in order that they may be of use to your engineering section.

Sincerely yours,

W. W. Towne, Director
Columbia River Basin Project

cc: Mr. James Cannon
Corps of Engineers
Walla Walla, Washington

2/2/66 Copy of attachment obtained from [illegible] — Xerox copy routed to FLN, DP, DRT, + copy for W/CE project files

cc (blind): M. E. Wilcox

RJCallaway:dk 1-19-66

LUCKY PEAK RESERVOIR

1965

WATER QUALITY DATA REPORT

COLUMBIA RIVER BASIN COMPREHENSIVE PROJECT
FOR WATER SUPPLY AND POLLUTION CONTROL

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION, PACIFIC NORTHWEST
570 Pittock Block
Portland, Oregon 97205

January, 1966

NOTE: Report transmitted to USACE Walla Walla
(cover letter dated 1/19/66)

2/2/66 Xerox copy routed to FLN, DLP, & DRT (for Dan T.)
Xerox copy for Project Files--
(1) Lucky Peak, CE-7
(2) Twin Springs, CE-7
(3) Mtn Home, ER-7

- -

THIS IS A "PRELIMINARY REPORT"--
Survey still under way.

LUCKY PEAK RESERVOIR

WATER QUALITY DATA REPORT

I. INTRODUCTION

On June 30, 1965, the first of a series of water quality surveys on Lucky Peak Reservoir was conducted. Field work was conducted by personnel of the Federal Water Pollution Control Administration in a cooperative study with the U. S. Army Corps of Engineers, Walla Walla District, to determine any significant changes in water quality factors within the impoundment during a period of seasonal influence. At the time of water quality sampling, simultaneous vertical profile measurements of current and temperature was recorded by the Corps of Engineers crew.

Upon completion of the first survey, a preliminary survey report was written. With the exception of this report, no attempt has been made to analyze data thus far collected. At the time of this writing, the field investigations are continuing. A discussion of the procedure and methodology involved and a presentation of data collected through November 1965 is contained in this report.

II. FIELD PROCEDURE

Station locations were located by means of preset range markers and a depth indicator. Station locations are shown in Figure 1.

All work is done from the Corps of Engineers' boat, which is equipped for taut wire mooring. An underwater instrument package consisting of current speed and direction indicator, thermistor, and a depth meter is lowered while instantaneous plots of data are made on an X-Y Plotter located in the cabin of the boat. At the same time, water for chemical

analysis were collected at various depths using 3-liter capacity Vandorn bottles placed in tandem on a hydrographic wire. Depths sampled varied with thermocline position and station depth.

Dissolved oxygen samples were drawn off from the Vandorn samplers, then dosed and fixed for titration upon completion of the day's sampling.

Temperature profiles were obtained by use of a Wallace & Tiernan 450-Foot Bathythermograph.

Conductivity was determined by placing the probe of a Whitney Conductivity Temperature instrument into each Vandorn sampler.

pH was colorimetrically determined by the use of a Hellige color comparitor, Model 600-CA.

Light penetration as percent of light remaining was obtained by using a Whitney Deck - sea cell, readings being made every two feet.

III. LABORATORY PROCEDURE

Immediately after sampling, the two-quart polyethyline sample containers were placed on dry-ice and frozen solid in tightly sealed ice chests for shipment back to the Portland laboratory where they were then transferred to a freezer chest until time of analysis.

The following analytical methods were used:

Ortho Phosphate: The stannous chloride method as described in * "Standard Methods".

Total Phosphate: The method for total and Polyphosphate as described in * "Standard Methods".

On the survey of 11-2-65 an alternate method was employed in the determination of total phosphate and was performed along with the above method. This method, published by Menzel and Corwin ("Limnology and Oceanography" Vol. 10, No. 2 April 1965) has superior detection limits and is soon to be accepted in all F.W.P.C.A. laboratories as routine analytical procedure.

Nitrate: The Phenoldisulfonic acid method as found in "Standard Methods"

On all the above determinations, the photometric results were obtained through the use of a Beckman Model DB Spectrophotometer. The readings were made with 1 cm. optical cells.

* Standard Methods for the Examination of Wastewater, 11th Edition, APHC, AWWA, WPCF, Published by American Public Health Association.

V. DATA PRESENTATION

The data are arranged by each survey, with the first survey (6-30-65) in the front and proceeding through each survey in sequence. The station data (within each survey section) is arranged by station, starting from the station nearest the dam (1) and working upstream. The data headings are explained as follows:

Station - identified as to location, range, etc.

Date - month, day and year station was occupied.

Time - the local time the messenger was released on the most significant cast.

Depth - Descent from surface (in feet) at which sample was obtained.

Temp. - Temperature in °F. recorded from Bathythermograph slide.

Conductivity - Specific conductance in micromhos per centimeter.

pH - The logrithm of the reciprocal of the hydrogen ion concentration in moles per liter.

DO - Concentration of dissolved oxygen in milligrams per liter of water.

DO % Saturation - Ratio of the amount of oxygen dissolved in the sample, compared to the amount of oxygen necessary to saturate a sample of the same water, as per calculations made by Whipple & Whipple.

LUCKY PEAK RESERVOIR
WATER QUALITY DATA
June 30 - July 1, 1965

PRELIMINARY

I. INTRODUCTION

Measurements of temperature, conductivity, dissolved oxygen, and light penetration were made on June 30 and July 1, 1965, at seven stations in Lucky Peak Reservoir, Idaho (Figure I).

Sampling was performed from a Walla Walla District, U. S. Army Corps of Engineers boat. Samples were obtained while Corps of Engineers personnel made vertical profiles of current velocity and temperature. Public Health Service data are listed in the appended table.

II. PROCEDURES

Temperature was measured with a 450-foot bathythermograph. Surface temperature was measured with a hand thermometer. Corps of Engineers personnel also obtained X-Y plots of temperature using a thermistor. There was excellent agreement between the thermistor and BT temperature profiles.

Dissolved oxygen samples were obtained at depth using 3-liter capacity Van Dorn bottles. The Alsterberg modification of the Winkler method was used.

Conductivity . After water was drawn off for the oxygen sample, a Whitney conductivity probe was placed in the Van Dorn sampler and readings were made.

Light penetration. A sea-dock photoelectric cell reading of light penetration was made at two-foot increments until about five percent light remained.

III. DAM OPERATIONS

A. Lucky Peak.

Pool levels and releases in Lucky Peak Reservoir were:

	Level	Storage (AF)	Release
June 28, 1965	--	258,803	9,000
June 29, 1965	--	261,525	8,083
June 30, 1965	3,053.93	261,443	8,000
July 1, 1965	3,053.10	259,183	8,000

Gate bottom is 2,827.00 feet above mean sea level.

The intake thermometer reading of 52 degrees Fahrenheit was measured at a depth of 203 feet.

B. Arrowrock.

	Lev Level	Storage (AF)	Release
June 28, 1965	3,217.3	290,630	10,502
June 29, 1965	3,217.0	289,700	8,892
June 30, 1965	3,216.8	289,080	7,308
July 1, 1965	3,217.1	290,010	6,343

Drum gates are 3,216 feet above mean sea level.

Needle valves are 3,105 feet above mean sea level.

Releases were being made over the drum gates and the deep needle valves during the survey. Release over the drum gate had a dark green tinge, indicating an abundance of phytoplankton.

IV. RESULTS

A. Station Curves.

Vertical station curves of temperature, dissolved oxygen, and percent oxygen saturation are shown in Figures 2 and 3.

1. Temperature

The temperature curve for Station 1 shows a well-mixed layer to about sixty feet where a sharp thermocline about five feet in thickness is present. Station 2 shows a less well-developed surface heated layer. The irregular shape of the curve below fifty feet indicates considerable vertical motion.

Stations 3 through 7 exhibit no thermocline; the surface heated layer becomes thinner proceeding upstream where, at Station 7, it is some two to five feet thick. This would indicate mechanical turbulence that acts to prevent the formation of a thermocline. Station 4 is in Moras Creek; here temperatures below forty feet are warmer than those at the same depth at Stations 2, 3, and 5-7. The warmer Moras Creek waters are caused by the relatively slow exchange of Creek and main reservoir waters. The longer residence time in the creek allows for more efficient heating throughout the water column; the absence of wind mixing prevents the formation of a thermocline as is developed at Station 1.

2. Dissolved oxygen

With one exception (Station 2, 200 feet), all the waters in the reservoir were supersaturated with oxygen at the time of this survey.

In general, the temperature-dissolved oxygen station curves were mirror images. If a continuous dissolved oxygen versus depth profile were available, as in the case of temperature, this would be even more so.

For an average release of 8,250 cfs from Arrowrock Dam, only 16 days would be required to fill Lucky Peak to the pool level existing during the survey. This also means that there is a relatively short retention time of waters in Lucky Peak; hence, if supersaturated waters from Arrowrock surface waters mixed with the colder Arrowrock deep releases, this water could sink and fill Lucky Peak. The absence of any industrial or biochemical oxygen demanding substance in either reservoir permits, in conjunction with rapid vertical mixing, maintenance of these high dissolved oxygen waters below the photosynthetic zone.

3. Light Penetration

Figure 4 serves to indicate the difference in light penetration at Mores Creek and the main reservoir stations.

The solid lines represent the envelope of light extinction curves for all stations except that in Mores Creek which is shown as a dotted line. The extinction of light is quite abrupt, with only five percent light (relative to the surface) remaining at eight feet for Mores Creek and ten-sixteen feet for the other stations.

The turbid upper layers are reflected in the conductivity profile of Figure 5. In general, the reservoir had a light brown color in contrast to the blue-green color of the Boise River below Lucky Peak dam.

B. Vertical Sections and General Circulation

Vertical sections of all parameters are shown in Figure 5.

Temperature and conductivity decrease with depth, while dissolved oxygen shows the existence of two cells (> 11.0 mg/l). The dissolved oxygen cells lose their identity when the percent saturation profile is considered.

All of the sections shown were used with the Corps of Engineers' vertical current velocity sections to derive the schematic general circulation pattern shown in Figure 6. Notes of the velocity distribution were made in the field; the final workup of the Corps of Engineers data may alter the details of this schematic, but the gross picture is probably a fair representation of circulation during the survey.

Figure 6 implies the existence of upstream movement at about thirty feet throughout the reservoir. There is also a clockwise eddy in the pool centered at about fifty feet, and a counterclockwise eddy below Arrowrock dam. The main current appears to be due to cold water from the Arrowrock needle valves diving through the reservoir toward the outlet at Lucky Peak. This is also indicated by the 37.5 umho/cm contourin Figure 5.

Calloway

TABULATED DATA
LUCKY PEAK RESERVOIR
June 30 - July 1, 1965

STATION 1. Lucky Peak Dam, 200 yards upstream of.
Time: 0927 MDT
Date: June 30, 1965

Weather: Clear
Wind: None

Depth (ft.)	Temp. (°F)	Cond. (umho/cm)	D.O. mg/l	D.O. % Sat.	Depth (ft.)	% Light Remain.
5	59.0	44	10.28	113	2	65
50	53.1	42	10.24	111	4	32
60	58.0	42	10.96	119	6	20
100	53.0	38	11.58	119	8	14
200	52.0	38	10.92	111	10	10
					12	7
					14	4
					16	2

STATION 2. Lucky Peak Reservoir, River Mile 2.
Time: 1108 MDT
Date: June 30, 1965

Weather: Clear
Wind: 5-10 knots

Depth (ft.)	Temp. (°F)	Cond. (umho/cm)	D.O. mg/l	D.O. % Sat.	Depth (ft.)	% Light Remain.
.5	58.0	44	10.24	112	2	70
30	57.0		10.32	111	4	52
50	54.2		10.90	114	6	35
100	53.0		11.70	120	8	24
200	51.5		9.88	99	10	16
					12	11
					14	7
					16	4
					18	3

STATION 3. Lucky Peak Reservoir, River Mile 4.
Time: 1248 MDT
Date: June 30, 1965

Weather: Clear
Wind: None

Depth (ft.)	Temp. (°F)	Cond. (umho/cm)	D.O. mg/l	D.O. % Sat.	Depth (ft.)	% Light Remain.
5	60.0	49	10.30	118	2	64
25	54.5	40	11.00	115	4	48
50	53.5	39	11.60	119	6	33
100	52.7	36	11.32	116	8	22
180	52.2	35	10.88	111	10	15
					12	10
					14	7
					16	4
					18	3

STATION 4. Moros Creek Bridge.
Time: 1411 MDT
Date: June 30, 1965

Weather: Clear
Wind: None

Depth (ft.)	Temp. (°F)	Cond. (umho/cm)	D.O. mg/l	D.O. % Sat.	Depth (ft.)	% Light Remain.
5	60.0	53	9.50	106	2	40
25	54.5	42	10.12	106	4	20
50	53.0	38	10.68	112	6	10
100	52.7	37	10.92	112	8	5
					10	3

STATION 5. Lucky Peak Reservoir, River Mile 6.
Time: 0853 MDT
Date: July 1, 1965

Weather: Overcast
Wind: None

Depth (ft.)	Temp. (°F)	Cond. (umho/cm)	D.O. mg/l	D.O. % Sat.	Depth (ft.)	% Light Remain.
0	63.0	48	9.90	115	2	50
25	55.0	40	11.10	117	4	35
40	53.9	37	11.42	119	6	22
90	52.9	34	11.08	114	8	14
140	52.4	33	10.90	111	10	8
					12	6
					14	4

3

STATION 6. Lucky Peak Reservoir, River Mile 8.
Time: 0955 MDT
Date: July 1, 1965

Weather: Overcast
Wind: 2 knots

Depth (ft.)	Temp. (°F)	Cond. (umho/cm)	D.O. mg/l	D.O. % Sat.	Depth (ft.)	% Light Remain.
0	64.0	49	9.74	114	2	56
25	54.8	40	10.66	111	4	38
50	53.8	36	11.00	114	6	24
100	53.0	35	11.10	114	8	16
					10	9
					12	6
					14	4

4,000 feet

STATION 7. Arrowrock Dam,/downstream of.
Time: 1100 MDT
Date: July 1, 1965

Depth (ft.)	Temp. (°F)	Cond. (umho/cm)	D.O. mg/l	D.O. % Sat.	Depth (ft.)	% Light Remain.
0	64.0	46	10.38	120	2	39
25	53.9	35	10.94	114	4	25
50	53.3	35	11.08	114	6	15
90	53.0	34	10.90	112	8	11
					10	6
					12	5
					14	3

NPS Form
July 1959 14.

Hydrologic Data

Page

Project LUCKY PEAK RESERVOIR

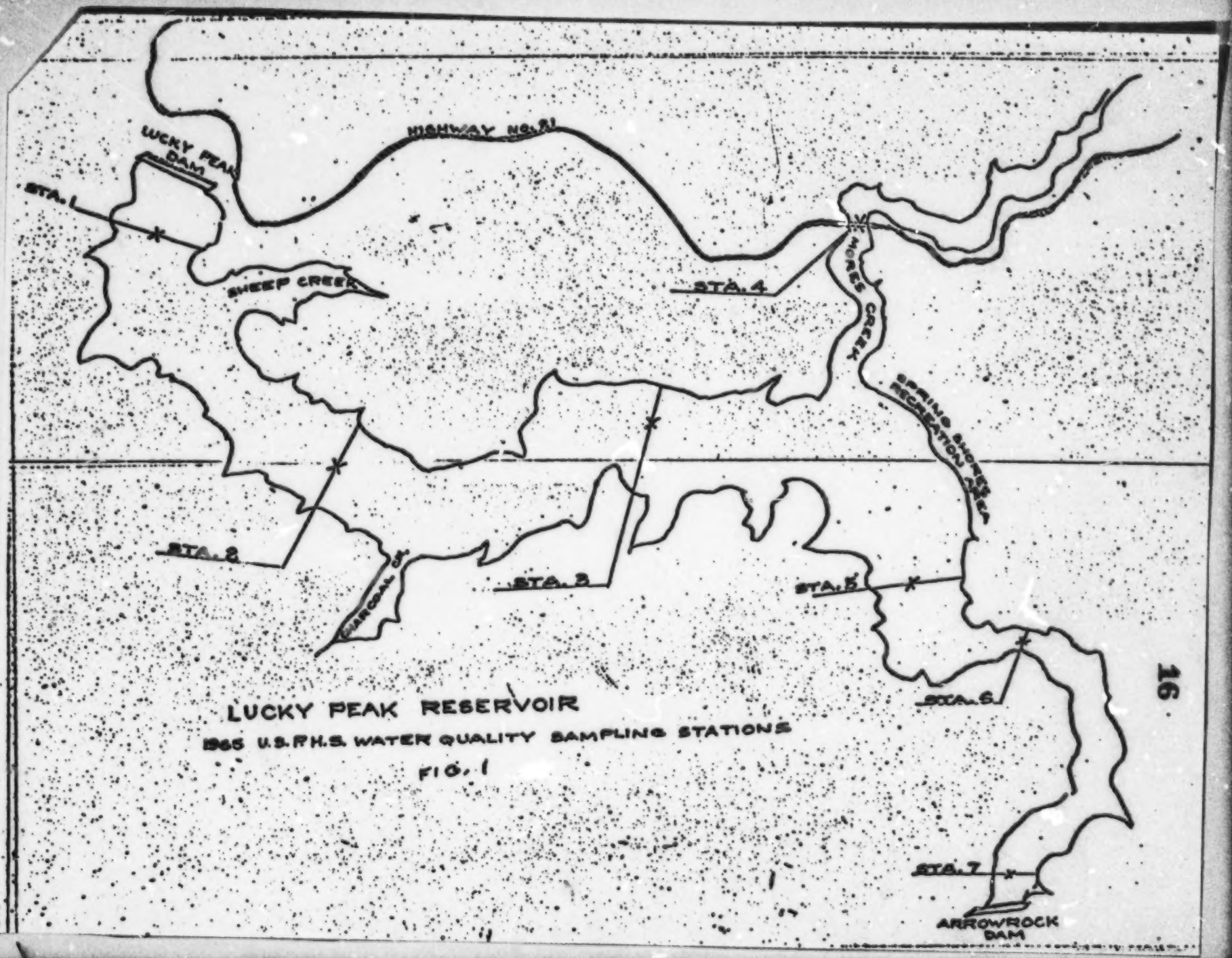
Comp.

Subject BT SOUNDINGS 6/30 - 7/1 65

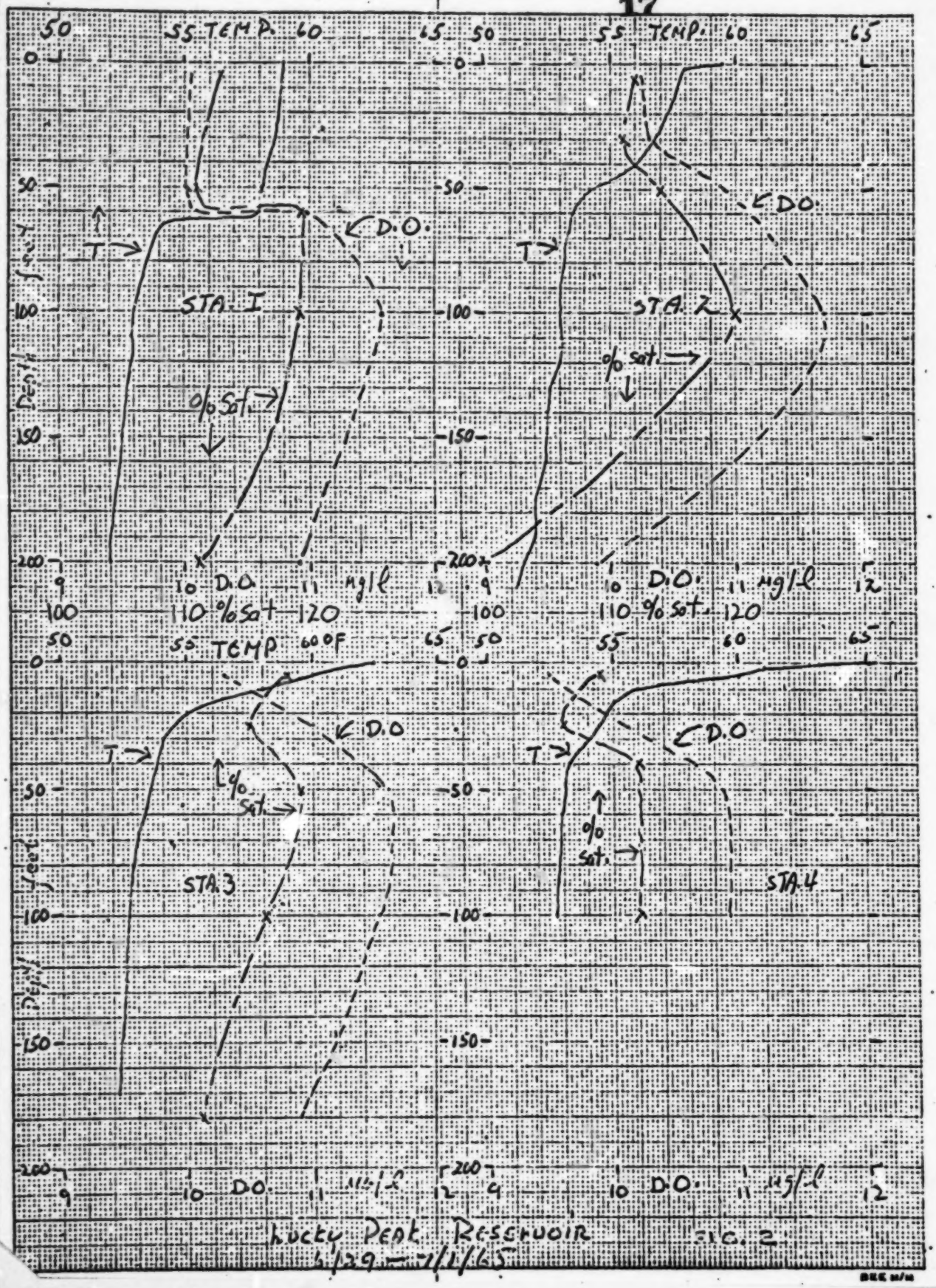
Chkd.

Date:

LOCATION	STA. #1	STA. #2	STA. #3	STA. #4	STA. #5	STA. #6	STA. #7				
DATE	6-30	6-30	6-30	6-30	7-1	7-1	7-1				
TIME	0927	1114	1248	1411	0853	0955	1100				
DEPTH ↓											
0	59.0	59.2	62.0	65.8	63.2	67.0	62.6				
10	58.9	57.6	58.0	57.8	60.0	60.0	54.2				
20	58.8	57.2	54.9	54.8	57.4	55.2	54.0				
30	58.6	56.6	54.0	54.0	54.8	54.6	54.0				
40	58.4	55.8	53.8	53.2	53.8	54.2	53.8				
50	58.2	53.6	53.4	53.0	53.6	53.8	53.2				
60	58.0	53.5	53.2	52.9	53.4	53.2	53.2				
70	53.6	53.4	53.0	53.8	53.1	53.1	53.2				
80	53.2	53.2	52.8	52.8	53.0	53.1	53.2				
90	53.0	53.0	52.7	52.7	52.8	53.0	53.0				
100	52.9	53.0	52.7	52.7	52.7	53.0	BOTTOM 97'				
110	52.8	53.1	53.6	BOTTOM 105'	52.5	BOTTOM 105'					
120	52.8	53.0	52.5		52.4						
130	52.7	52.7	52.5		52.4						
140	52.6	52.5	52.3		52.5						
150	52.5	52.3	52.2		BOTTOM 148'						
160	52.3	52.4	52.2								
170	52.2	52.2	52.1								
180	52.1	52.0	BOTTOM 170'								
190	52.0	51.8									
200	52.0	51.4									
	BOTTOM 205'	BOTTOM 205'									



LUCKY PEAK RESERVOIR
1965 U.S.F.H.S. WATER QUALITY SAMPLING STATIONS
FIG. 1



Lucky Peak Reservoir
6/29 – 7/1/65

FIG. 2

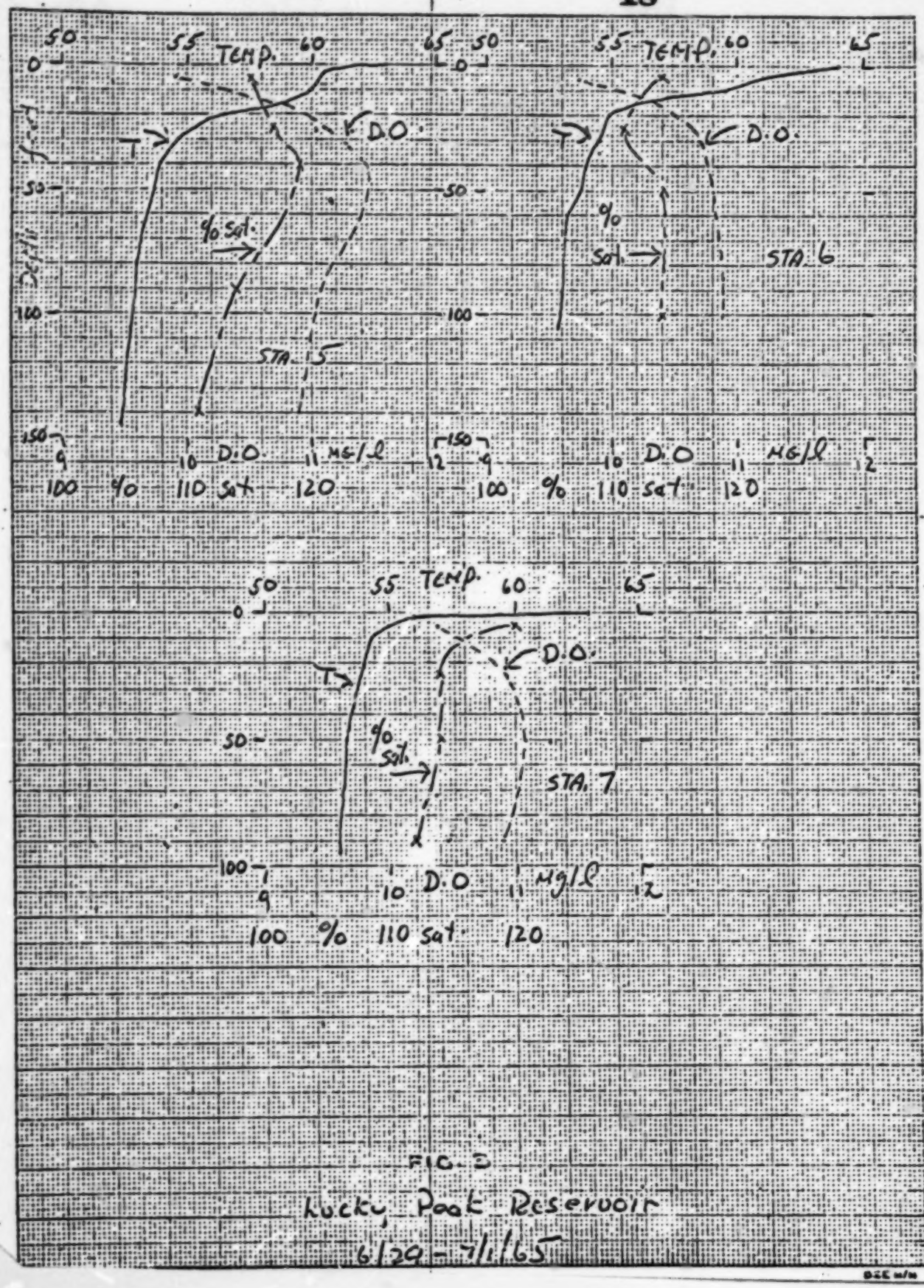


FIG. 3

Lucky Peak Reservoir

6/29 - 7/1/65

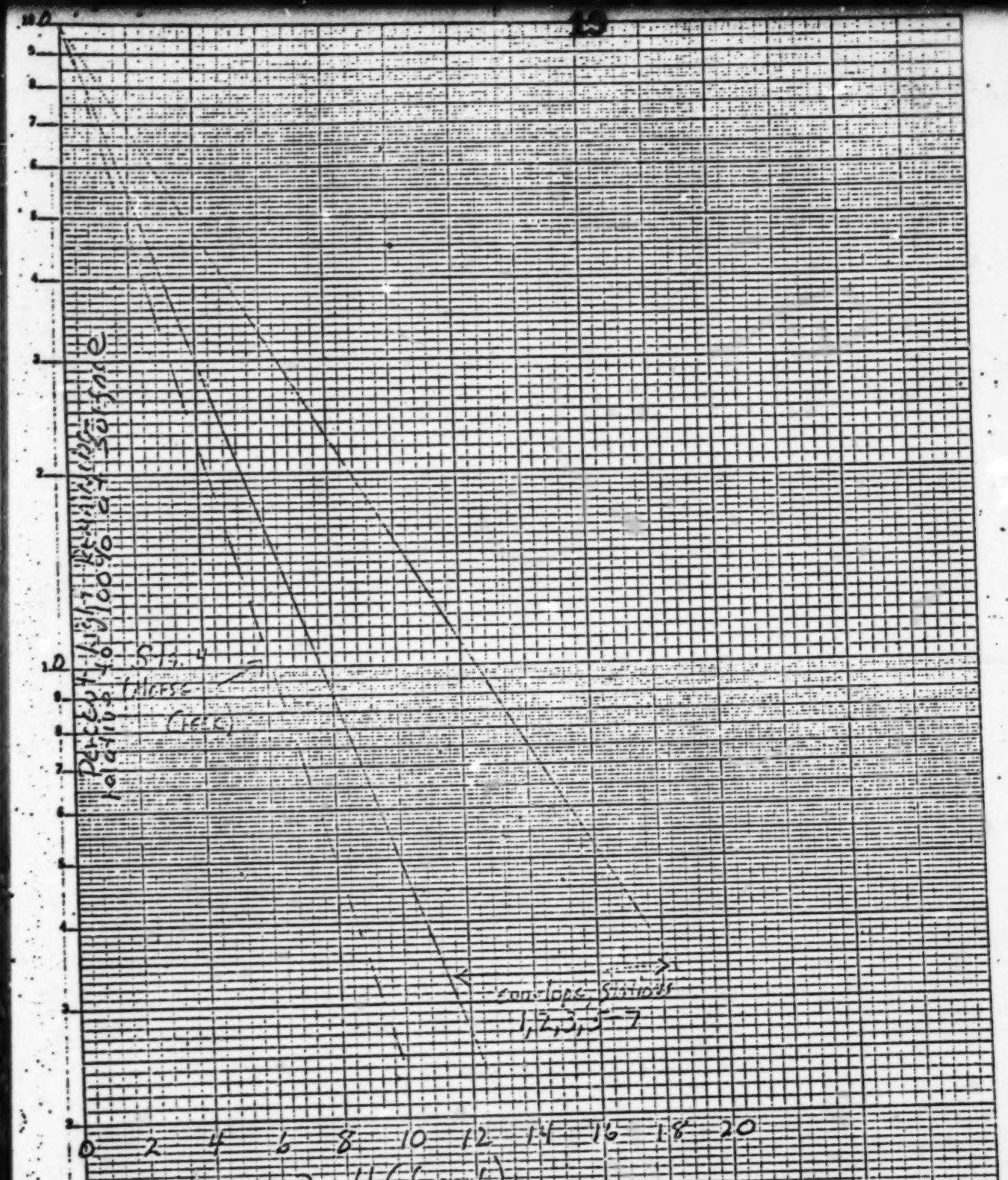


FIG 4

Sig. Extinction Curves

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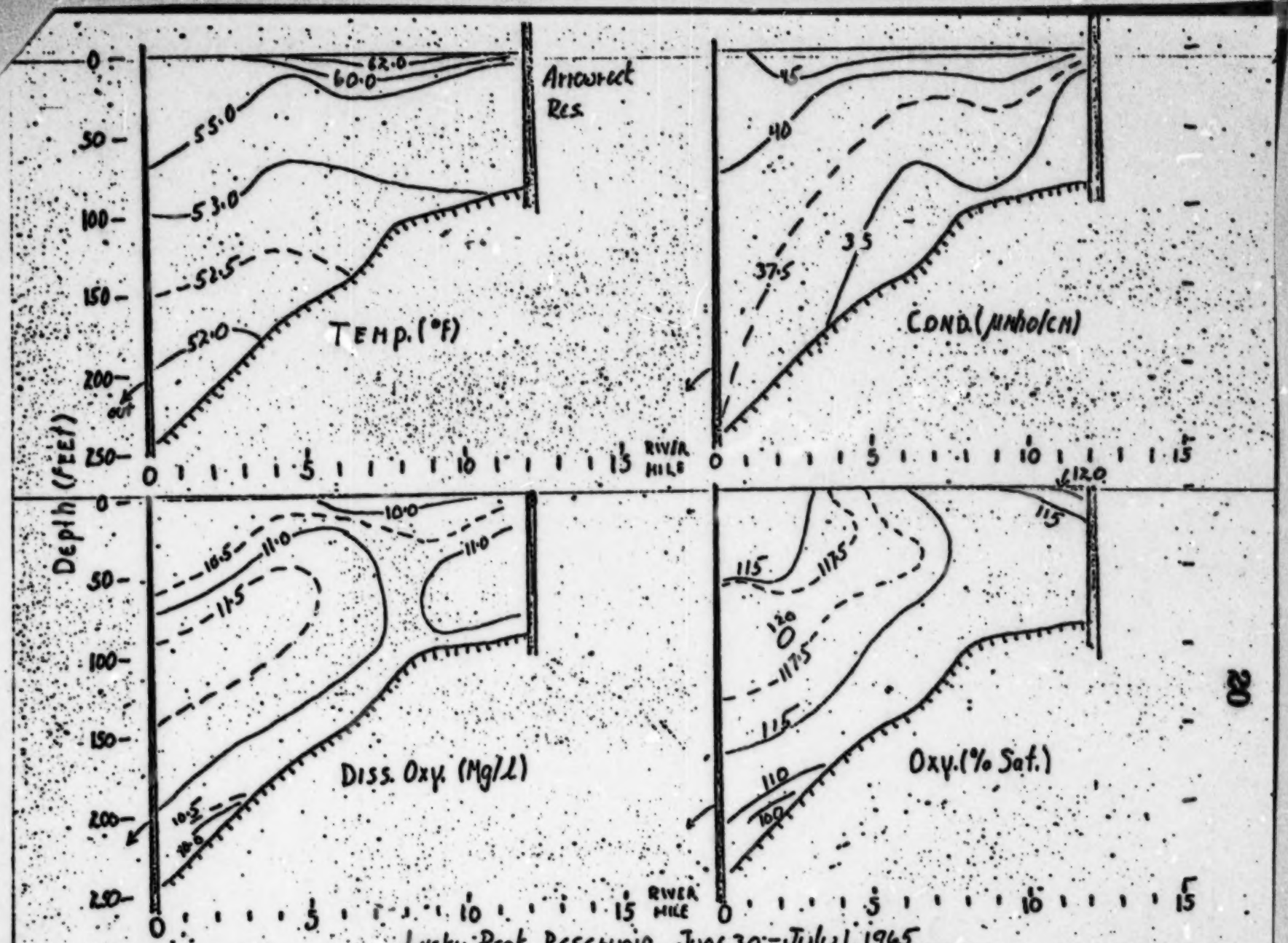
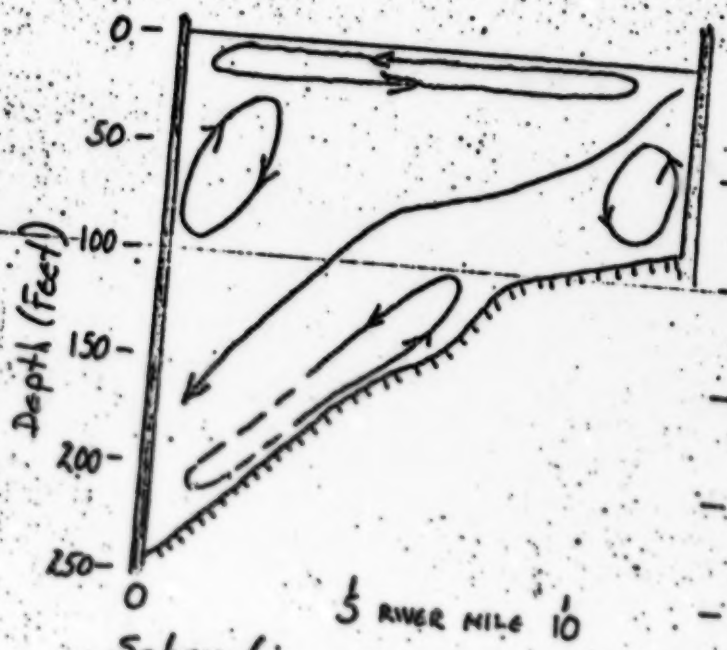


Lucky Peak Reservoir June 30–July 1, 1965
Water Quality Vertical Sections
Fig. 5.



Schematic of General Circulation Lucky Peak Reservoir. Derived from USPHS Water Quality data & Corps of E. Current Velocity Data. June 30-July 1, 1965

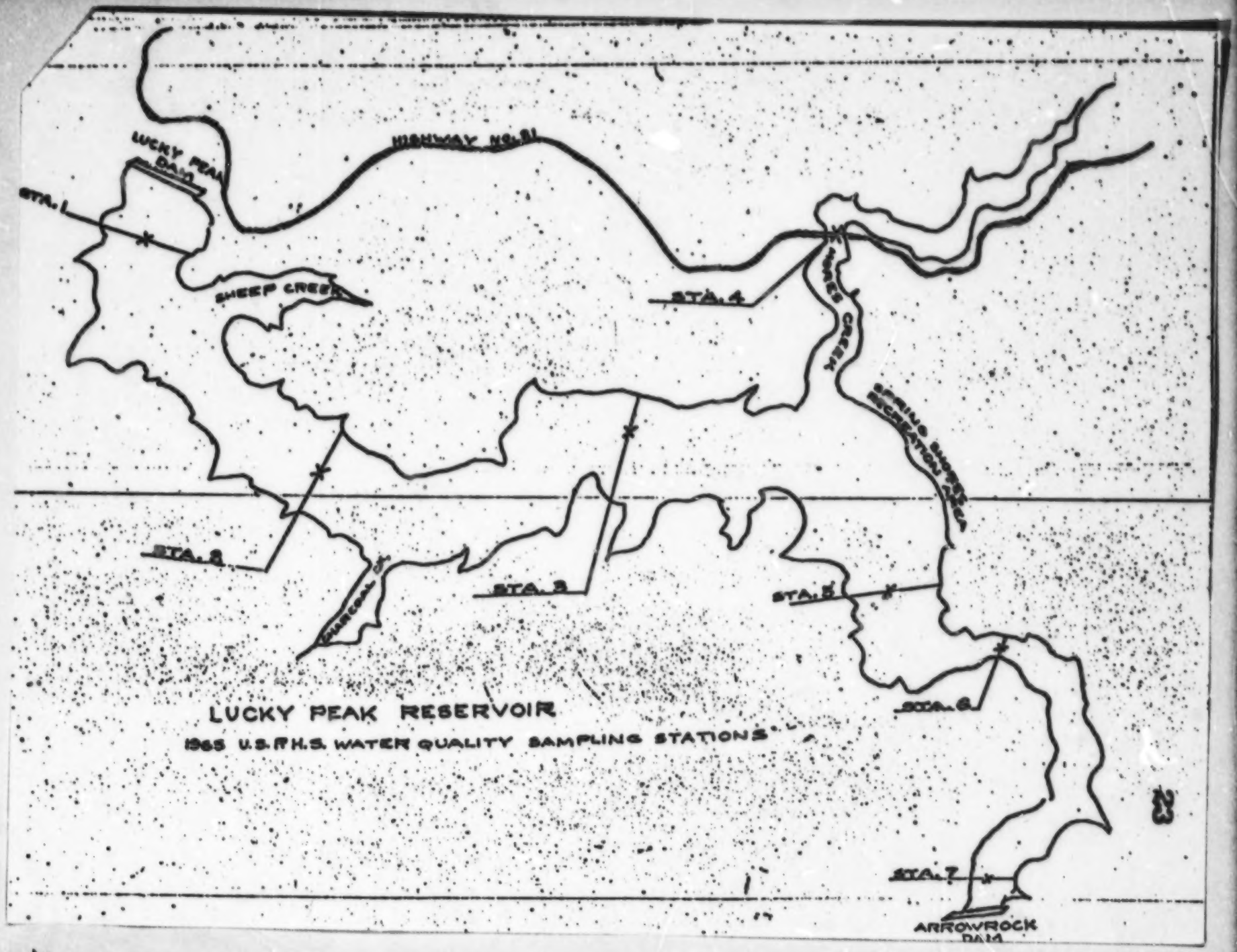
Fig. 6

LUCKY PEAK RESERVOIR
WATER QUALITY DATA REPORT
August 10-11, 1965

Columbia River Basin Comprehensive Project
for Water Supply and Pollution Control

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Federal Water Pollution Control Administration
Pacific Northwest
Portland, Oregon

November 1965



LUCKY PEAK RESERVOIR

1965 U.S.F.H.S. WATER QUALITY SAMPLING STATIONS

TABULATED DATA
LUCKY PEAK RESERVOIR
November 22, 1965

STATION 1. 100 Yds. Upstream from Dam

Time: 0915
Date: August 10, 1965

Depth ft.	Temp. °C	Temp. °F	D.O. mg/l	D.O. % Sat.	pH	Cond. umho/cm	Phosphate Ortho	Phosphate Total	Nitrate mg/l	Light Pen. ft.	Light Pen. %
Surf.	19.2	66.6	8.58	103	6.5	44	0.01	0.02	0.01	2	29
25	19.0	66.2	8.62	101	6.6	45	0.04	0.02	0.01	4	20
50	19.0	66.2	8.36	92	6.5	45	0.01	0.02	0.01	6	15
100	14.7	58.5	9.44	103	6.4	36	0.02	0.05	0.03	8	11
150	14.3	57.7	9.46	102	6.5	35	0.04	0.05	0.03	10	8
200	14.1	57.4	8.74	93	6.5	35	0.03	0.07	0.06	12	6

STATION 2. 2 Miles Upstream from Station 1 - RM 2.

Time: 1100
Date: August 10, 1965

Depth ft.	Temp. °C	Temp. °F	D.O. mg/l	D.O % Sat.	pH	Cond. umho/cm	Phosphate Ortho	Phosphate Total	Nitrate mg/l	Light Pen. ft.	Light Pen. %
Surf.	18.4	65.1	8.70	103	6.8	41				2	67
25	18.3	64.9	8.72	100	6.5	39				4	47
50	15.3	59.5	9.62	106	6.7	39				6	44
100	14.7	58.5	8.58	93	6.7	38				8	33
188	14.7	58.5	8.98	97	6.7	36				10	22

2

STATION 3. 2 Miles Upstream from Station 2 - MI 4

Time: 1145
Date: August 10, 1965

Depth ft.	Temp. °C	Temp. °F	D.O. mg/l	D.O. % Sat.	pH	Cond. mho/cm	Phosphate Ortho	Phosphate Total	Nitrate mg/l	Light Pen. ft.	Light Pen. %
Surf.	19.2	66.6	8.62	103	6.9	48				2	79
15	19.2	66.6	8.82	103	7.0	51				4	64
50	15.6	60.1	9.42	104	6.9	41				6	50
100	14.8	58.6	9.58	93	6.9	39				8	29
150	14.5	58.1	8.98	97	6.9	37				10	25

STATION 4. Moses Creek @ Hwy 21 Bridge - MI 6.

Time: 1255
Date: August 10, 1965

Depth ft.	Temp. °C	Temp. °F	D.O. mg/l	D.O. % Sat.	pH	Cond. mho/cm	Phosphate Ortho	Phosphate Total	Nitrate mg/l	Light Pen. ft.	Light Pen. %
Surf.	20.8	69.4	8.63	105	7.6	64				2	71
15	16.6	61.9	8.92	101	7.2	46				4	57
50	15.3	59.5	9.34	103	7.0	42				6	46
100	15.0	59.0	6.30	69	6.8	42				8	36
										10	24
										12	19
										14	11
										16	9
										18	6
										20	4

STATION 5. 2 Miles Upstream from Station 4 - RM 6.

Time: 1425
Date: August 10, 1965

Depth ft.	Temp. °C	Temp. °F	D.O. mg/l	D.O. % Sat.	pH	Cond. umho/cm	Phosphate Ortho	Phosphate Total	Nitrate mg/l	Light Pen. ft.	Light Pen. %
Surf.	20.9	69.6	8.78	103	7.0	53	0.01	0.04	0.01	2	71
15	16.6	61.9	9.52	203	6.8	45	0.01	0.02	0.01	4	57
50	15.7	60.3	9.78	103	6.8	43	0.04	0.04	0.04	6	46
100	14.6	58.3	9.60	104	6.7	40	0.05	0.06	0.05	8	36
125	15.1	59.1	9.70	105	6.8	40	-	0.03	-	10	26
										12	16
										14	13
										16	9
										18	6
										20	5

STATION 6. 2 Miles Downstream from Arrowrock Dam

Time: 0900
Date: August 11, 1965

Depth ft.	Temp. °C	Temp. °F	D.O. mg/l	D.O. % Sat.	pH	Cond. umho/cm	Phosphate Ortho	Phosphate Total	Nitrate mg/l	Light Pen. ft.	Light Pen. %
Surf.	20.0		8.60	105	7.2	51				2	60
15	11.5		9.90	112	7.2	47				4	40
50	11.2		9.80	109	7.0	43				6	33
100	11.2		10.80	118	6.8	39				8	27
125	11.2		9.04	97	6.8	37				10	16
										12	12
										14	7
										16	5

STATION 7. 200 Yds. Downstream from Arrowrock Dam.

Time: 1020
Date: August 11, 1965

Depth ft.	Temp. °C	Temp. °F	D.O. mg/l	D.O. % Sat.	pH	Cond. mho/cm	Phosphate Ortho	Phosphate Total	Nitrate mg/l	Light Pen. ft.	Light Pen. %
Surf.	16.0	60.8	9.92	110	7.0	43	0.02	0.03	0.04	2	62
25	16.0	60.8	9.93	110	6.8	43	0.03	0.07	0.04	4	54
50	16.0	60.8	9.20	102	6.7	49	0.05	0.03	0.04	6	35
75	16.0	60.8	10.30	111	6.7	43	0.02	0.04	0.05	8	23
90	16.0	60.8	9.93	111	6.7	43	0.04	0.07	0.04	10	18
										12	13
										14	8
										16	6
										18	4

Form 939 14

Hydrologic Data

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Project LUCKY PEAK RESERVOIR

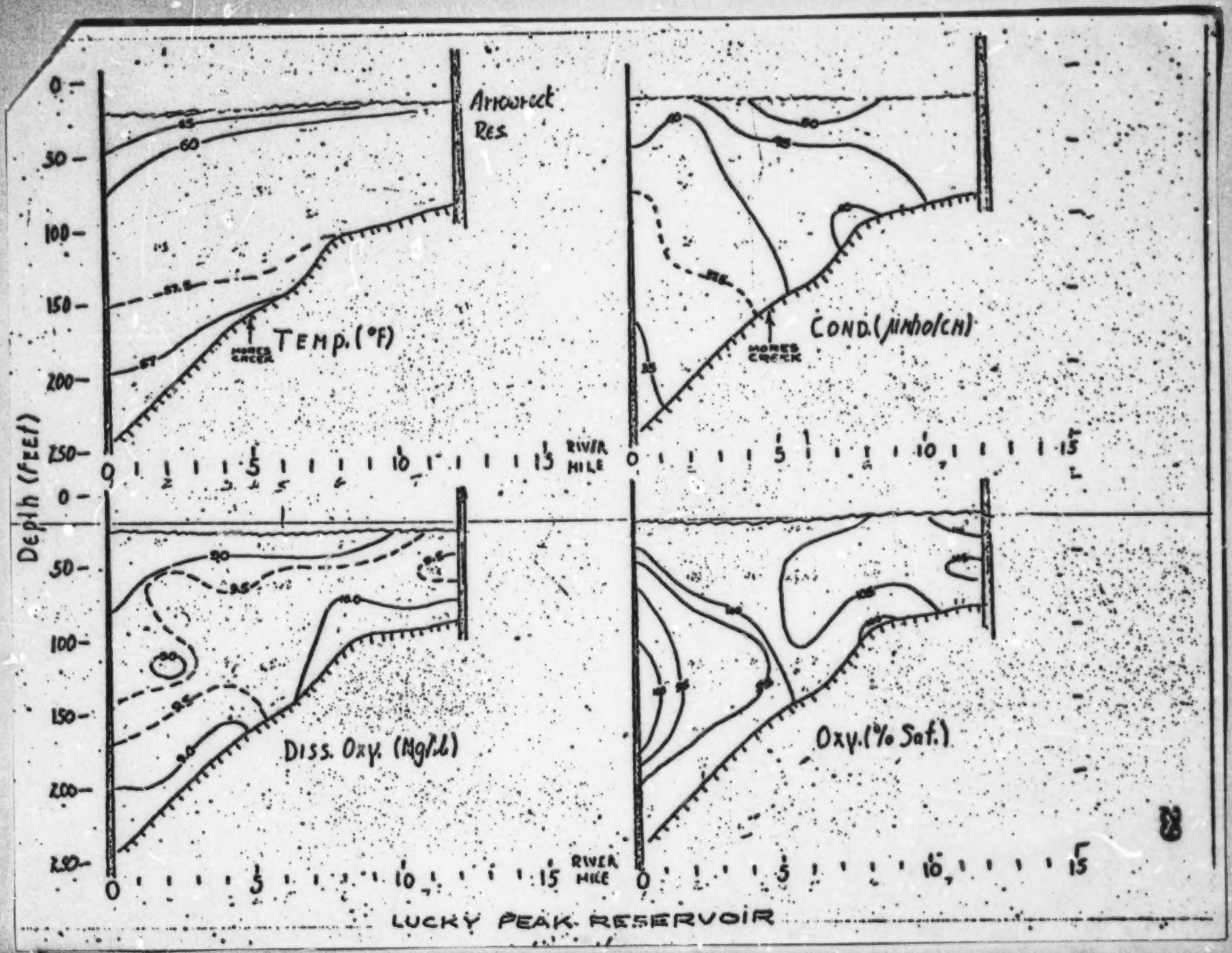
Comp.

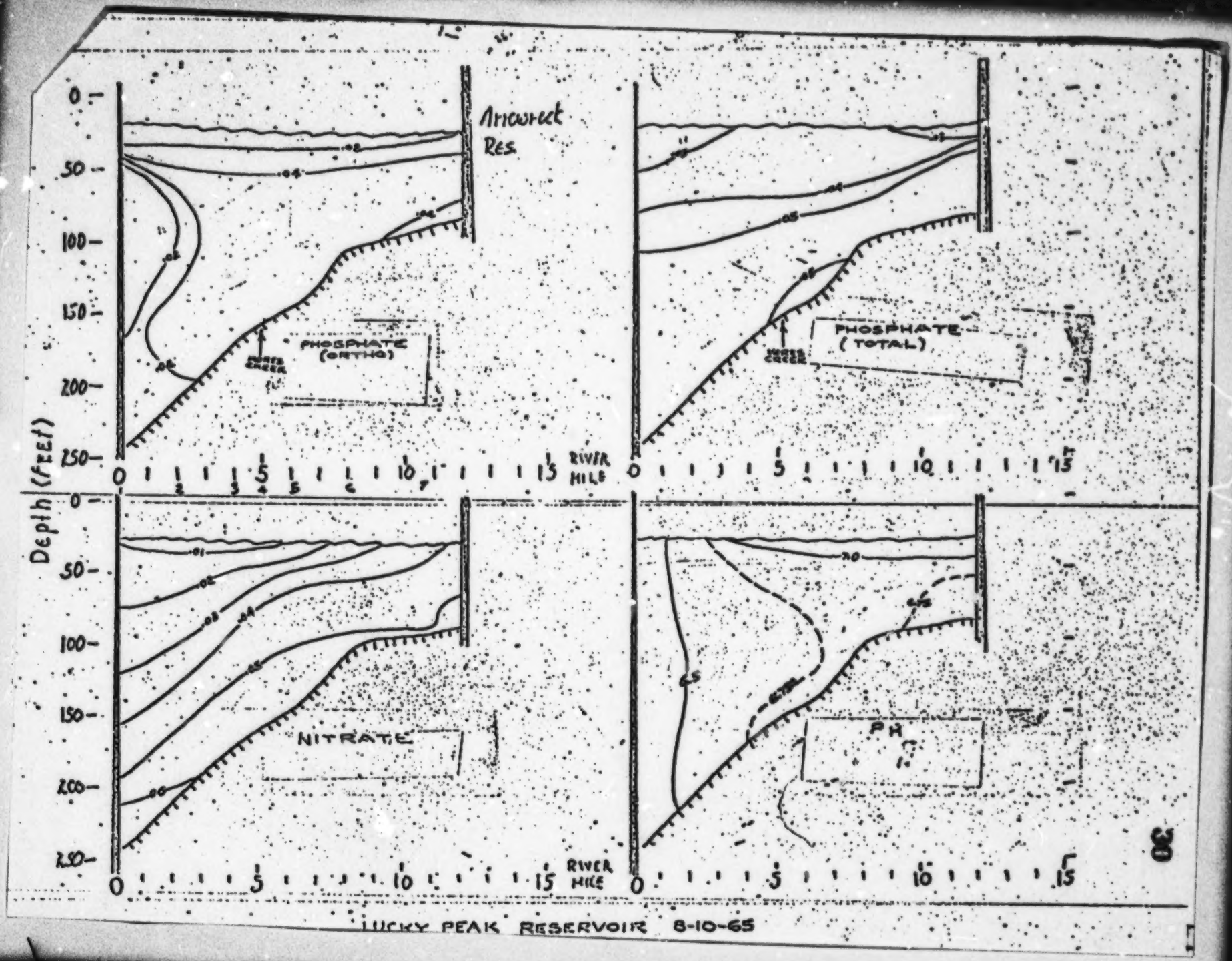
Subject B.T. SOUNDINGS °F

Chkd. OH

Date: 8/10-11/65

LOCATION	8-10 STA. 1	8-10 STA. 2	8-10 STA. 3	8-10 STA. 4	8-10 STA. 5	8-11 STA. 6	8-11 STA. 7				
TIME	0915	1100	1145	1255	1425	0900	1020				
AIR TEMP.	23°C	26°C	31°C	31°C	—	—	25.5°C				
DEPTH											
0	66.8	65.2	66.0	67.0	60.8	67.8	59.8				
10	66.6	65.1	64.2	62.0	62.8	62.4	59.8				
20	66.0	64.4	60.2	60.0	59.6	60.4	59.7				
30	63.0	59.8	59.4	59.5	59.4	59.3	59.6				
40	59.2	59.8	58.9	59.2	59.1	59.7	59.4				
50	58.3	58.6	58.8	58.9	58.9	59.3	59.4				
60	58.6	58.4	58.6	58.8	58.7	59.4	59.2				
70	58.4	58.2	58.4	58.6	58.5	59.0	59.3				
80	58.2	58.1	58.2	58.4	58.3	58.6	59.3				
90	58.1	58.0	58.0	58.3	58.1	58.2	59.2				
100	57.9	57.9	57.8	58.0	57.8	58.0	59.2				
110	57.8	57.8	57.6	57.6	57.6	57.7	BOTTOM 100'				
120	57.6	57.6	57.5	BOTTOM 110'	57.5	57.4					
130	57.5	57.5	57.2		57.4	57.2					
140	57.4	57.4	57.1		BOTTOM 130'	BOTTOM 130'					
150	57.2	57.2	57.0								
160	57.1	57.1	BOTTOM 158'								
170	57.0	57.0									
180	56.8	56.9									
190	56.6	BOTTOM 190'									
200	56.4										
210	BOTTOM 205'										


Arrowrock Res.
TEMP. (°F)
COND. (µmho/cm)
DISS. OXY. (Mg/L)
OXY. (% Sat.)
MORES CREEK
DEPTH (FEET)
RIVER MILE
LUCKY PEAK RESERVOIR

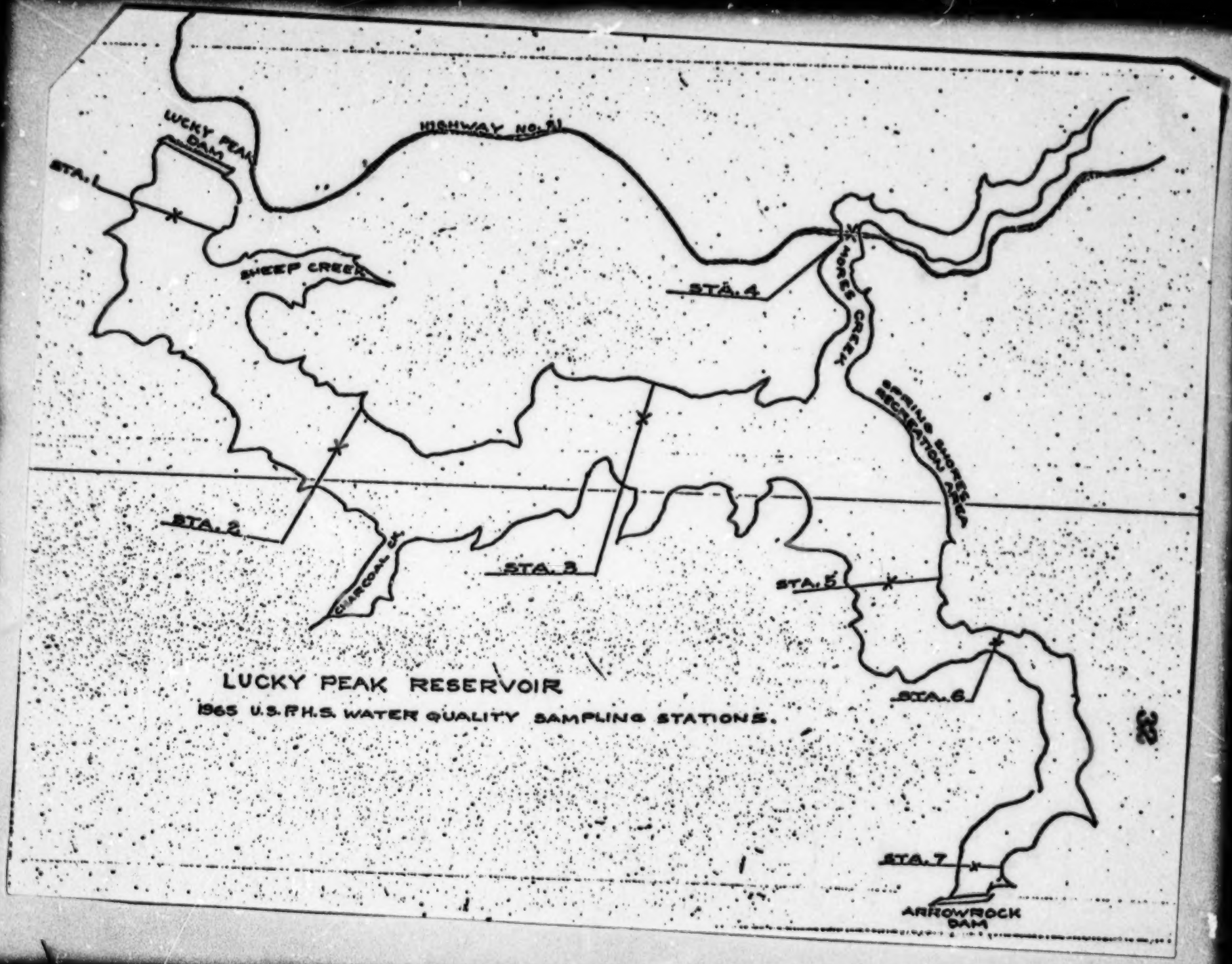

Arrowrock Res.
PHOSPHATE (ORTHO)
PHOSPHATE (TOTAL)
NITRATE
PH
Depth (feet)
RIVER MILE
LUCKY PEAK RESERVOIR 8-10-65

LUCKY PEAK RESERVOIR WATER QUALITY DATA REPORT
October 6 and November 2, 1965

Columbia River Basin Comprehensive Project
for Water Supply and Pollution Control

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Federal Water Pollution Control Administration
Pacific Northwest
Portland, Oregon

November 1965



LUCKY PEAK RESERVOIR

1965 U.S.P.H.S. WATER QUALITY SAMPLING STATIONS.

TABULATED DATA
LUCKY PEAK RESERVOIR, IDAHO
October 6 and November 2, 1965

STATION 1. 2000 feet from Lucky Peak Dam.
Time: 1640
Date: October 6, 1965

Weather: Clear
Wind: W-15

Depth ft.	Temp. °C	Cond. µmho/cm	DO mg/l	DO % sat.	Phosphate Total	Phosphate Ortho	% Light Remaining	Depth Ft.
0	15.9	53	8.52	94	0.05	0.03	32	2
25	15.2	52	8.58	95	0.08	0.07	16	4
50	15.2	52	8.44	93	0.04	0.03	8	6
100	15.0	51	8.46	93	0.05	0.03	4	8
145	15.0	52	8.36	91	0.05	0.02	2	10
							1	12

STATION 5. One mile up reservoir from Mores Creek.
Time: 1500
Date: October 6, 1965

Weather: Clear
Wind: NW-10

Depth ft.	Temp. °C	Cond. µmho/cm	DO mg/l	DO % sat.	Phosphate Total	Phosphate Ortho	% Light Remaining	Depth Ft.
0	15.4	52	8.64	96	0.04	0.02	73	2
25	14.8	52	8.20	90	0.05	0.03	33	4
50	14.8	52	8.28	91	0.06	0.03	21	6
							12	8
							7	10
							4	12
							3	14

STATION 7. 200 yards downstream from Arrowrock Dam.
Time: 1400
Date: October 6, 1965

Weather: Clear
Wind: E-5

Depth ft.	Temp. °C	Cond. µmho/cm	DO mg/l	DO % sat.	Phosphate Total	Phosphate Ortho	% Light Remaining	Depth Ft.
0	16.4	58	-	-	0.06	0.03	60	2
25	15.2	63	8.80	95	0.05	0.02	40	4
							24	6
							15	8
							9	10
							5	12
							3	14

STATION 1. 100 yards upstream from dam.
Time: 1510 Weather: 20% clouds
Date: November 2, 1965 Wind: W-5

Depth ft.	Temp. °F	Cond. µmho/cm	DO mg/l	DO % sat.	Phosphate Total	Phosphate Ortho	Nitrate mg/l	pH
0	54.0	69.3	9.24	95	0.12	0.07	0.11	7.05
25	53.6	69.4	9.26	95	0.11	0.04	0.11	6.65
50	53.5	69.4	9.14	94	0.11	0.03	0.09	6.55
100	53.5	69.4	9.24	95	0.11	0.03	0.09	6.80
125	53.5	70.8	9.36	96	0.12	0.03	0.08	6.20

STATION 5. One mile up reservoir from Mores Creek.
Time: 1315 Weather: 20% clouds
Date: November 2, 1965 Wind: E-2

Depth ft.	Temp. °F	Cond. µmho/cm	DO mg/l	DO % sat.	Phosphate Total	Phosphate Ortho	Nitrate mg/l	pH
0	52.5	73.9	9.44	99	0.12	0.02	0.10	6.90
25	52.5	73.4	9.36	97	0.11	0.02	0.12	7.40
40	52.5	74.3	9.36	97	0.11	0.02	0.11	6.40

STATION 7. 200 yards downstream from Arrowrock Dam.
Time: 1140 Weather: 30% clouds
Date: November 2, 1965 Wind: Calm

Depth ft.	Temp. °F	Cond. µmho/cm	DO mg/l	DO % sat.	Phosphate Total	Phosphate Ortho	Nitrate mg/l	pH
0	47.0	120.0	6.06	58	0.25	0.04	0.10	7.35

This sample contained bottom sediments.

Hydrologic Data

Project: LUCKY PEAK RESERVOIR

Subject: BT SOUNDINGS °F

Page

Comp.

Chkd.

Date: 10-6-65

LOCATION	STA. #1	STA. #5
DATE	10-6-65	10-6-65
TIME	1540	1500
AIR TEMP	65°F	70°F
DEPTH ft		
0	58.9	58.9
10	58.8	58.7
20	↓	58.7
30	↓	58.6
40	↓	58.6
50	↓	58.6
60	58.6	58.5
70	↓	BOTTOM 63'
80	↓	
90	↓	
100	58.5	
110	↓	
120	↓	
130	↓	
140	↓	
150	58.4	
160	BOTTOM 150'	
170		
180		
	60	

Hydrologic Data

Page

Project: LUCKY PEAK RESERVOIR

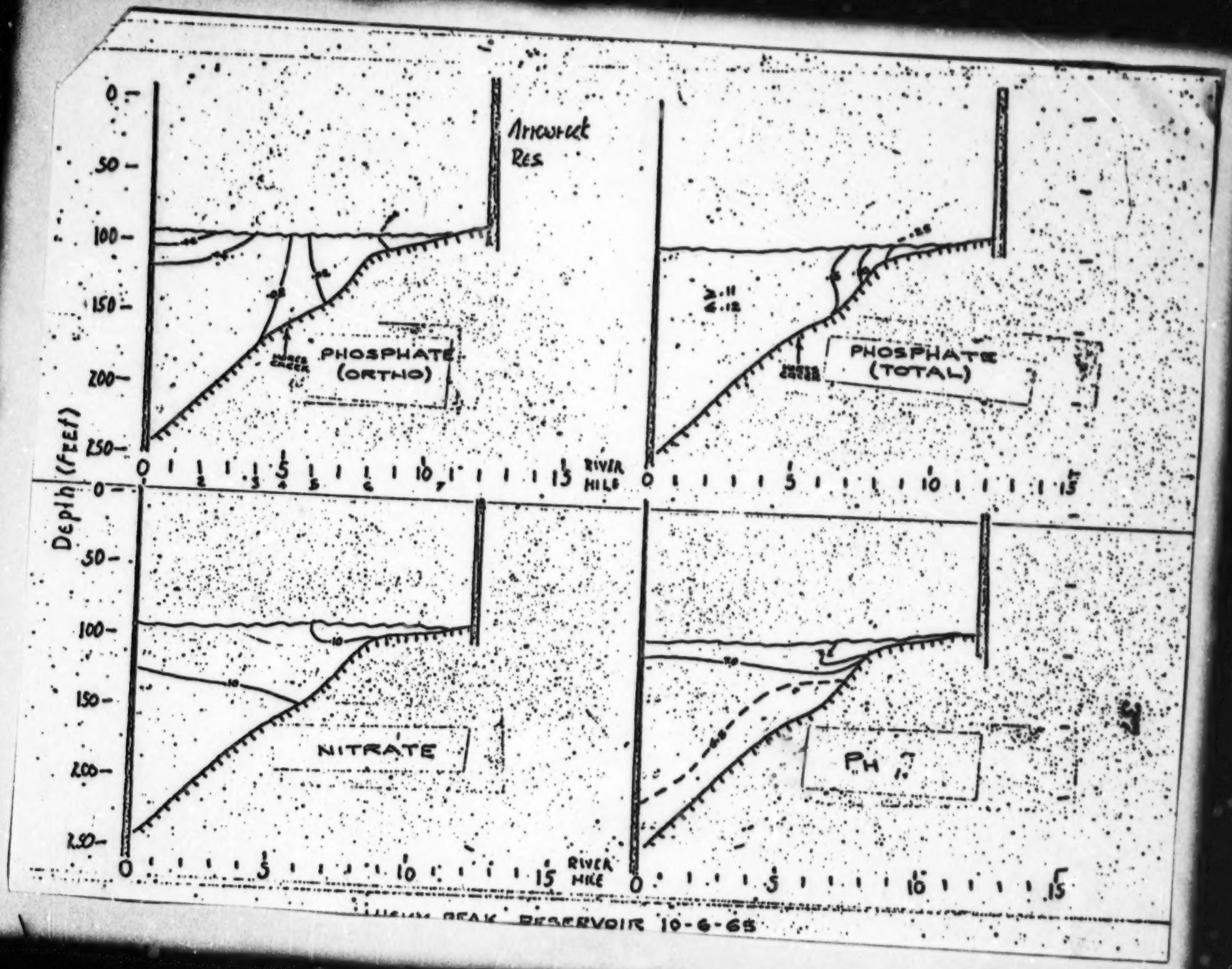
Comp.

Subject: BT SOUNDINGS 11-2-65

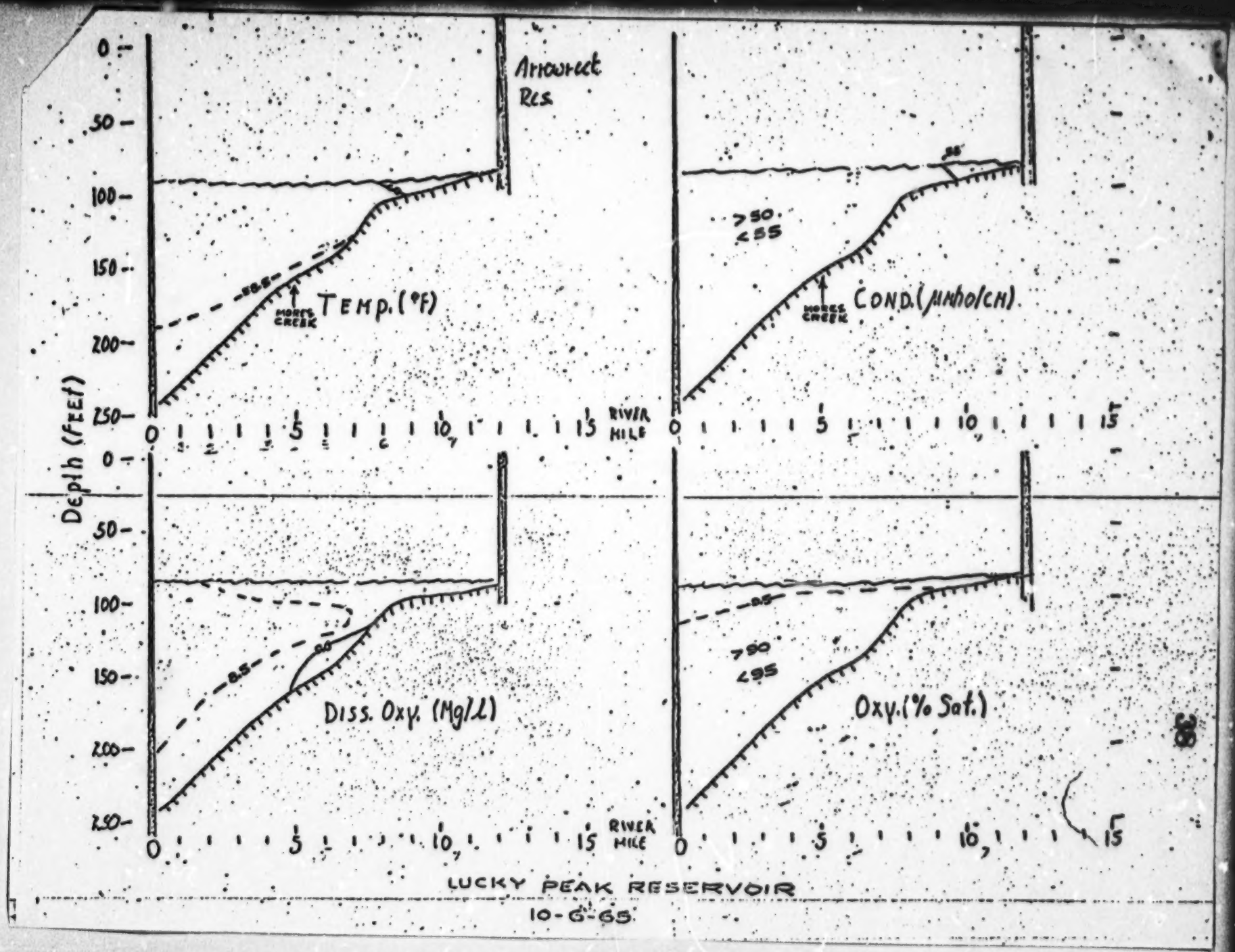
Chkd.

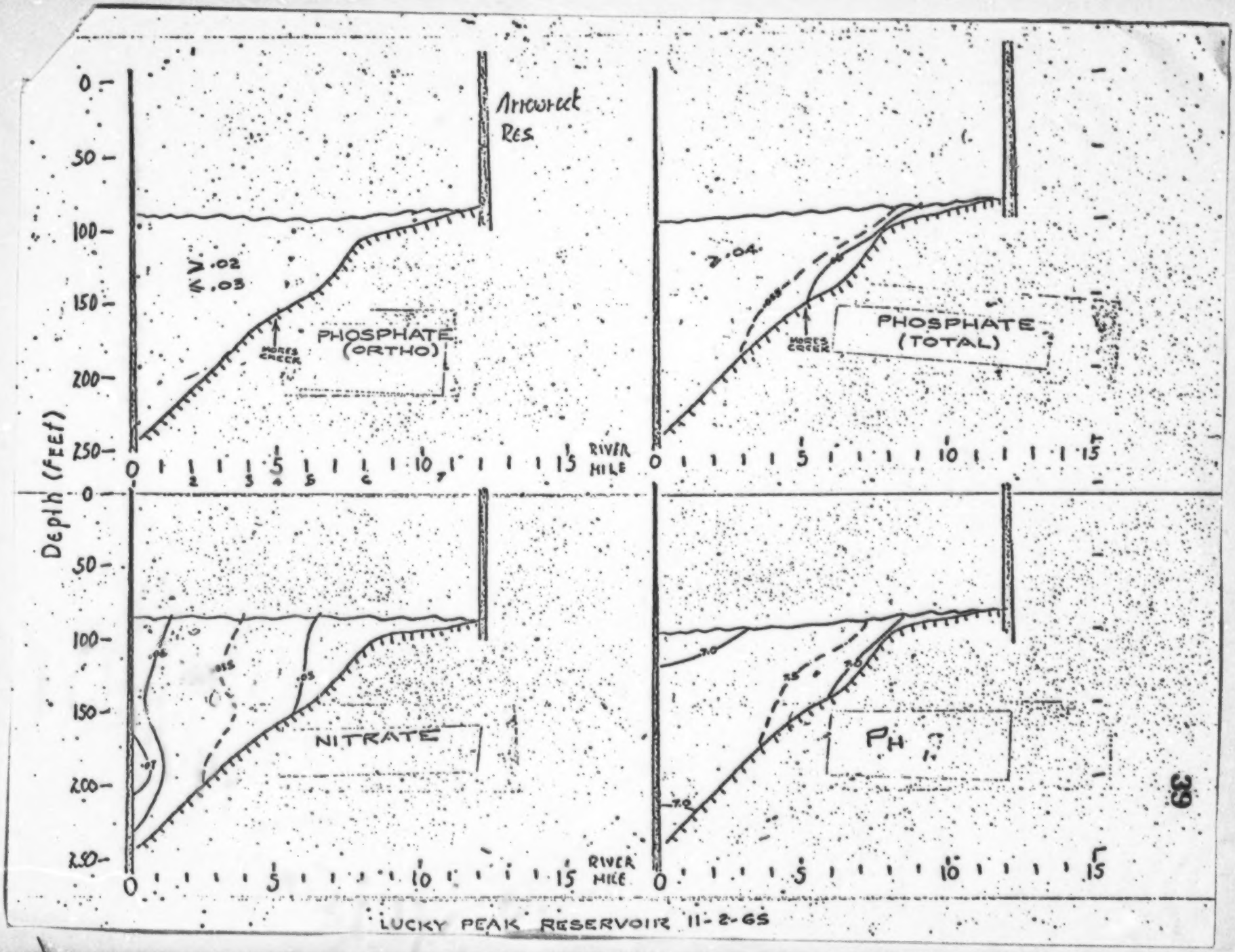
Date:

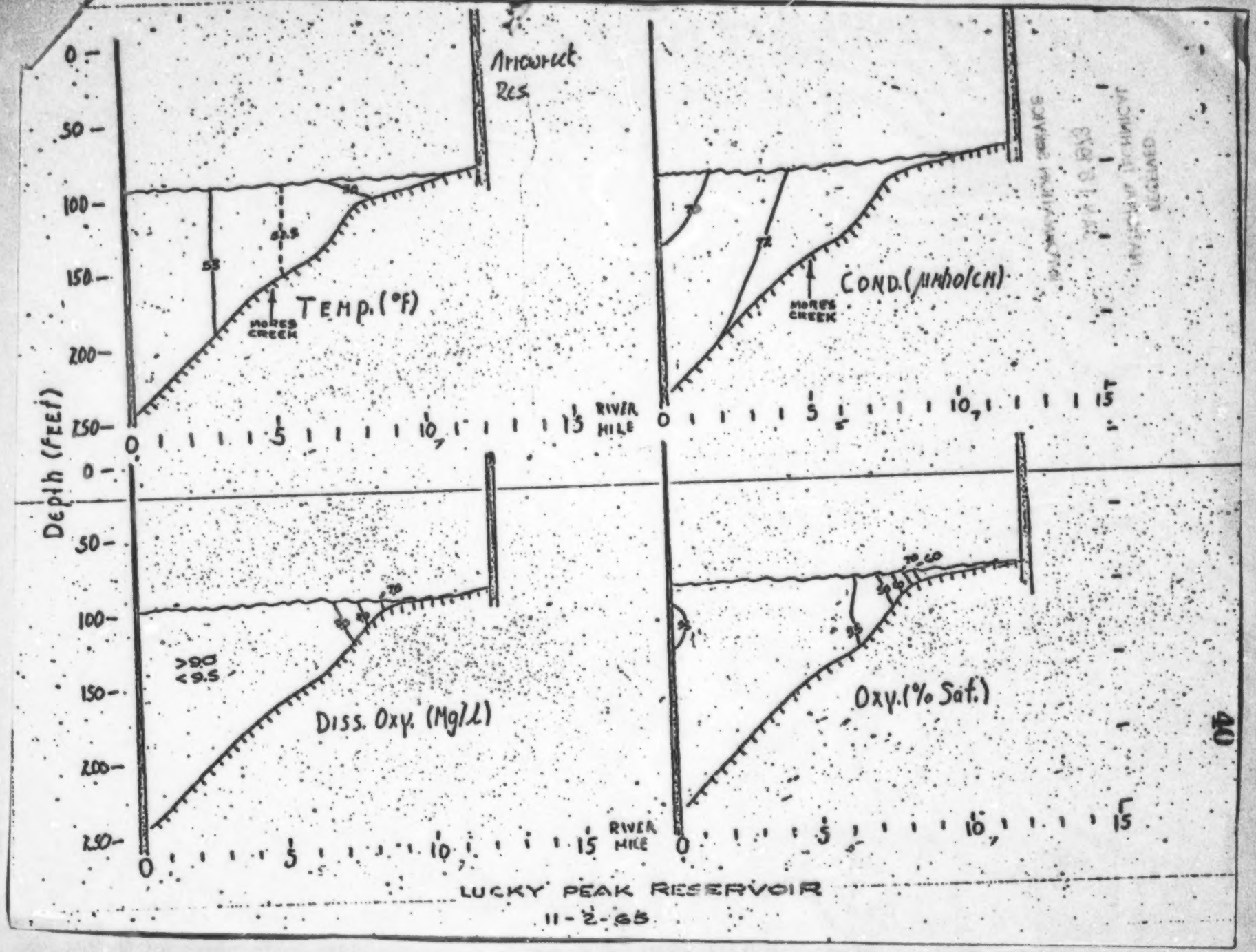
LOCATION	STA. #5	STA #1
DATE	11-2-65	11-2-65
TIME	1510	1160
AIR TEMP	65°F	56°F
DEPTH		
0	52.5	54.0
10		53.6
20		53.6
30		53.5
40		
50	40' BOTTOM	
60		
70		
80		
90		
100		
110		
120		
130		
140		130' BOTTOM



HIGH PEAK RESERVOIR 10-6-65


Arrowrock Res.
Depth (Feet)
0
50
100
150
200
250
TEMP. (°F)
MORES CREEK
COND. (μmho/cm)
>50
<55
RIVER MILE
0
5
10
15
Diss. Oxy. (Mg/l)
Oxy. (% Sat.)
>90
<95
LUCKY PEAK RESERVOIR
10-6-65


Arrowrock Res
PHOSPHATE (ORTHO)
PHOSPHATE (TOTAL)
NITRATE
PH
MORES CREEK
RIVER MILE
Depth (FEET)
LUCKY PEAK RESERVOIR 11-2-65


Arrowrock Res
TEMP. (°F)
MORES CREEK
COND. (µmho/CM)
MORES CREEK
Depth (FEET)
RIVER MILE
Diss. Oxy. (Mg/L)
>9.0
<9.5
Oxy. (% Sat.)
LUCKY PEAK RESERVOIR
11-2-65